SENSORS AND ACTUATORS A VOLUME A27, NUMBERS 1–3, MAY 1991

Contents

Micromachined Sensors

Micromachined capacitive accelerometer 555
U. E. Gerlach-Meyer (Frankfurt am Main, F.R.G.)

Fabrication of capacitive acceleration sensors by the LIGA technique 559
C. Burbaum, J. Mohr, P. Bley and W. Ehrfeld (Karlsruhe, F.R.G.)

Small-size vacuum sensors based on silicon thermopiles. 565
A. W. van Herwaarden, D. C. van Duyn and J. Groeneweg (Delft, The Netherlands)

Fabrication of a planar grating spectrograph by deep-etch lithography with synchrotron radiation. 571
J. Mohr (Karlsruhe, F.R.G.), B. Anderer (Düsseldorf, F.R.G.) and W. Ehrfeld (Karlsruhe, F.R.G.)

Silicon gas flow sensors using industrial CMOS and bipolar IC technology 577
D. Moser, R. Lenggenhager and H. Baltes (Zurich, Switzerland)

Design considerations for a permanent-rotor-charge-excited micromotor with an electrostatic bearing 583
R. F. Wolffenbuttel, J. F. L. Goosen and P. M. Sarro (Delft, The Netherlands)

Capacitive polysilicon resonator with MOS detection circuit 591
C. Linder, E. Zimmermann and N. F. de Rooji (Neuchâtel, Switzerland)

Design of an integrated electrostatic stepper motor with axial field 597
L. Paratte, G.-A. Racine, N. F. de Rooij and E. Bornand (Neuchâtel, Switzerland)

Characterization and modelling of silicon piezoresistive accelerometers fabricated by a bipolar-compatible process 605
T. Tschan, N. de Rooij (Neuchâtel, Switzerland), A. Bezinge, S. Ansermet and J. Berthoud (Bevaix, Switzerland)

Signal Processing

A novel BIMOS signal processor for Pt 1000 temperature sensors with microcontroller interfacing. 613
G. C. M. Meijer and C. H. Voorwinden (Delft, The Netherlands)

Construction of a multisensor module system exemplified by an intelligent internal thread sensor 621
T. Pfeifer and E. Eikelmann (Aachen, F.R.G.)

Thermal Sensors

Thermal thin-film sensors for r.m.s. value measurements 629
T. Berlicki, S. Osadnik and E. Prociów (Wrocław, Poland)

Thin-film thermopiles in microcalorimeters 633
L. Brunetti, E. Monticone and G. Gervino (Turin, Italy)

Narrow-bandgap semiconductor-based thermal sensors. 637
A. Boyer, E. Cisse, Y. Azzouz and J. P. Cheron (Montpellier, France)

Microminiaturized thermistor arrays for temperature gradient, flow and perfusion measurements 641
H. Kuttner, G. Urban, A. Jachimowicz, F. Kohl, F. Olcaytug and P. Goiser (Vienna, Austria)

Investigation of polysilicon for its application to multi-functional sensors 647
O. Zucker, W. Langheinrich and J. Meyer (Darmstadt, F.R.G.)

Miniaturized thermoelectric radiation sensors covering a wide range with respect to sensitivity or time constant. 653
T. Elbel (Jena, F.R.G.)

Special Sensors

A novel diffusion-based silicon nuclear radiation detector 659
S. E. Wouters, T. Otaredian and E. M. Schooneveld (Delft, The Netherlands)

Elsevier Sequoia/Printed in The Netherlands

Compatibility of thin-film and semiconductor technology for monolithically integrated active sensors 665
K. Vernie, H. Rudolph and D. Seitzer (Erlangen, F.R.G.)

Cryogenic liquid level indicator based on t.e.m.f. of high-temperature superconductors 671
A. Uusimäki, T. Porjesz, E. Immonen, I. Kirschner and S. Leppävuori (Oulu, Finland)

An irreversible thermodynamic theory of measuring sensors 677
I. Kirschner (Budapest, Hungary and Oulu, Finland), S. Leppävuori (Oulu, Finland) and A. Haász (Budapest, Hungary)

Resonant Sensors

Frequency dependence of thermal excitation of micromechanical resonators 685
T. S. J. Lammerink, M. Elwenspoek and J. H. J. Fluitman (Enschede, The Netherlands)

Q-factor and frequency shift of resonating silicon diaphragms in air 691
A. Prak, F. R. Blom, M. Elwenspoek and T. S. J. Lammerink (Enschede, The Netherlands)

All-silicon plate wave oscillator system for sensors 699
M. J. Vellekoop, A. J. van Rhijn, G. W. Lubking and A. Venema (Delft, The Netherlands)

Quartz microbalance sensors for gas detection 705
R. Lucklum, B. Henning, P. Hauptmann (Magdeburg, F.R.G.), K. D. Schierbaum, S. Vaihinger and W. Göpel (Tübingen, F.R.G.)

Optically activated silicon microresonator transducers: an assessment of material properties 711
D. Walsh and B. Culshaw (Glasgow, U.K.)

Silicon pressure sensor based on a resonating element 717
R. A. Buser, N. F. de Rooij (Neuchâtel, Switzerland) and L. Schultheis (Baden, Switzerland)

Resonating microbridge mass flow sensor with low-temperature glass-bonded cap wafer 723
R. Legtenberg, S. Bouwstra and J. H. J. Fluitman (Enschede, The Netherlands)

Magnetic Sensors

Thermal effects in magnetic microsensor modeling 731
S. Rudin, G. Wachutka and H. Baltes (Zurich, Switzerland)

A magnetic sensor array for two-dimensional pattern-shift measurements 737
A. Bossche, H. C. J. M. van Gestel and J. R. Mollinger (Delft, The Netherlands)

New GaAs integrated magnetic field sensors with high sensitivities 741
N. Mathieu, A. Chovet (Grenoble, France), R. Fauquembergue, P. Descherdeer and A. Leroy (Villeneuve d'Ascq, France)

Electronic circuitry for a smart spinning-current Hall plate with low offset 747
P. J. A. Munter (Delft, The Netherlands)

CMOS-compatible magnetic field sensors fabricated in standard and in silicon on insulator technologies 753
R. Gottfried-Gottfried, G. Zimmer and W. Mokwa (Duisburg, F.R.G.)

Magnetic field sensors based on amorphous ribbons 759
V. E. Makhotkin, B. P. Shurukhin, V. A. Lopatin, P. Yu. Marchukov and Yu. K. Levin (Moscow, U.S.S.R.)

New magnetoresistive sensors: engineering and applications 763
F. Rottmann (Dortmund, F.R.G.) and F. Dettmann (Jena, F.R.G.)

Magnetic field fibre-optical sensors based on Faraday effect 767
S. N. Barybin, A. N. Grigorenko, V. I. Konov and P. I. Nikitin (Moscow, U.S.S.R.)

On the sensitivity of high-T_c superconducting ceramics as magnetic field sensors 775
C. Rillo, L. A. Angurel, J. Bartolomé, J. Gonzalo, F. Lera, R. Navarro, A. Martínez and P. Téllez (Zaragoza, Spain)

A 19-channel d.c. SQUID magnetometer system for brain research 781
J. Flokstra, H. J. M. ter Brake, E. P. Houwman, D. Veldhuis, W. Jaszczuk, M. Caspari, H. Rogalla (Enschede, The Netherlands), A. Martínez and C. Rillo (Zaragoza, Spain)

Mechanical Sensors

On-chip metal deformation measurements: a capacitive approach 789
A. Bossche, H. C. J. M. van Gestel and J. R. Mollinger (Delft, The Netherlands)

Robust magnetoelastic force sensor using amorphous metal alloys with low magnetic interference 793
J. Seekircher, B. Hoffmann and E. Miehlich (Karlsruhe, F.R.G.)

On-chip piezoresistive stress measurement in three directions. 801
H. C. J. M. van Gestel, A. Bossche and J. R. Mollinger (Delft, The Netherlands)

Flow measurement by a new push–pull swirlmeter 809
K. Heinrichs (Braunschweig, F.R.G.)

Non-linear analytical modelling of bossed diaphragms for pressure sensors. 815
H. Sandmaier (Munich, F.R.G.)

Problems of using accelerometers to measure angular rate in automobiles 821
P. E. M. Frere (Solihull, U.K.)

On-line measurement of high-speed rotating yarns 825
M. Renner, E. Aubry, B. Boubrik and M. Basset (Mulhouse, France)

The absolute strain gauge. 829
W. Chr. Heerens and S. D. Tarasenko (Delft, The Netherlands)

An integrable capacitive angular displacement sensor with improved linearity 835
R. F. Wolffenbuttel and R. P. van Kampen (Delft, The Netherlands)

Series 2000: taking the cost out of the industrial pressure transducer 845
P. W. Fry (Basingstoke, U.K.)

Polymer thick-film technology: a possibility to obtain very low cost pressure sensors?. 853
G. Harsányi (Budapest, Hungary)

A front end CMOS circuit for a full-bridge piezoresistive pressure sensor 859
J. Gakkestad, H. Jakobsen (Horten, Norway) and P. Ohlckers (Oslo, Norway)

Author Index of Volumes A25–A27 865

Subject Index of Volumes A25–A27 867